

7th EUROPEAN SOFC FORUM

Poster Presentations

Operational Experience

Performance of Reversible Solid Oxide Cells: A Review

Mogens Mogensen¹, Søren Højgaard Jensen^{1,2}, Anne Hauch^{1,3}, Ib Chorkendorff² and Torben Jacobsen³

¹Risø, Roskilde, ²TUD Physics, Lyngby, ³TUD Chemistry, Lyngby / Denmark

Construction of Methane Fed Fuel Cell Consisting of Proton Conducting Oxide Electrolyte

Sadae Yamaguchi, Toetsu Shishido and Akira Okubo
Chiba Institute of Technology, Narashino / Japan

Cell Power Enhancement via Materials Selection

Keqin Huang
Siemens Power Generation, Inc., Pittsburgh, PA / USA

Fabrication and Operation of On-Plane Type Single Chamber Solid Oxide Fuel Cells

Ji-Won Son¹, Hyungchul Kim¹, Sung-Moon Kim¹, Sun-Hee Choi¹, Sung-Jin Ahn^{1,2}, Jooho Moon², Hae-Ryung Kim¹, Jong-Ho Lee¹, Hae-Weon Lee¹ and Joosun Kim¹
¹KIST, ²Yonsei U., Seoul / Korea

SOFC Operation with Diesel Reformate – Investigation of Cell Performance and Long-Term Stability

Henrik Timmermann¹, André Weber¹, Ulrich Hennings², Ellen Ivers-Tiffée¹ and Rainer Reimert²

¹U. Karlsruhe, ²Engler-Bunte-Institut, Karlsruhe / Germany

Anode Supported Micro-Tubular SOFC for Small Power Applications

Partho Sarkar, Luis Yamarte and Lorne Johanson
Alberta Research Council, Edmonton / Canada

Evaluation of Electrodes for Single Chamber SOFC

Cornelia Endler, André Weber and Ellen Ivers-Tiffée
U. Karlsruhe, IWE, Karlsruhe / Germany

Operation Characteristics of 5kW Planar SOFC Stack under the Pressurized Condition at KIER

Tak-Hyoung Lim¹, Rak-Hyun Song¹, Dong-Hyun Peck¹, Dong Ryul Shin¹, Jung Il Yang¹, Heon Jung¹, Izaak C. Vinke²

¹KIER, Daejeon / Korea, ²FZJülich / Germany

Stack Designs Using SOFCConnex™ Stacking: Recent Results

Olivier Bucheli¹, Alexandre Closset¹, Stefan Diethelm¹, Raphaël Ihringer¹, John Schild², Nordahl Autissier², Arata Nakajo², Zacharie Wuillemin², Gabriele Proserpi², Luis Quina² and Jan Van herle²

¹HTceramix S.A, Yverdon-les-Bains, ²EPFL, LENI, Lausanne / Switzerland

Experimental Activity on the Tubular SOFC CHP100 Generator in Italy: Regression Models Analysis and Optimization

Massimo Santarelli¹, Pierluigi Leone¹, Michele Cali¹ and Ferrante De Benedictis²

¹Politecnico di Torino, ²Gas Turbine Technologies, Torino / Italy

Solid Oxide Fuel Cells at Prototech AS

Ivar Wærnhus, Bahareh Ganji, Asbjørn Strand, Arnstein Norheim and Arild Vik
Prototech AS, Bergen / Norway

Design and Development

Micro Tubular SOFCs for Micro Ceramic Reactor System

Toshio Suzuki¹, Toshiaki Yamaguchi¹, Yoshinobu Fujishiro¹, Masanobu Awano¹ and Yoshihiro Funahashi²

¹AIST, Nagoya / Japan, ²FCRA, Nagoya / Japan

Fabrication and Characterization of Components for Micro Tubular SOFCs

Yoshihiro Funahashi¹, Toru Shimamori², Toshio Suzuki³, Yoshinobu Fujishiro³ and Masanobu Awano³

¹Fine Ceramics Research Association, Nagoya / Japan

²NGK Spark Plug Co, Ltd., ³AIST, Nagoya / Japan

Solid Oxide Fuel Cell-Powered Unmanned, Undersea Vehicles

Louis G. Carreiro and A. Alan Burke

Naval Undersea Warfare Center, Newport, RI / USA

Planar IT-SOFC, Stack and Fuel Processor Development at IPPE

Vladimir Ruzhnikov, Nikolai Khramushin and Andrei Gulevich

SSCRF, Physics and Power Engineering, Obninsk / Russia

RF-Sputtering Technique: A Promising Tool for Ceria-Based Film Deposition

Cecilia Mortalò¹, Simona Barison¹, Sergio Daolio¹, Monica Fabrizio¹, Gaetano Chiodelli², Filippo Maglia², Cristina Tealdi², Vincenzo Palmieri³, Edoardo Roncari⁴ and Alessandra Sanson⁴

^{1,2}IENI-CNR, Padova, ³NFN-LNL, Legnaro, ⁴ISTEC-CNR, Faenza / Italy

LSCFO/CGO Catalyst for O₂ Reduction in IT-SOFC and Electrochemical Oxygen Generator Cells

Agusti Sin¹, Antonino S. Aricò², Laura Gullo², Daniela La Rosa², Elena Roda¹, Evgeny Kopnin¹, Antonio Zaopo¹ and Vincenzo Antonucci²

¹Pirelli Labs, Milan, ²CNR-ITAE, Messina / Italy

New Sol-Gel Process for the Synthesis of Nanopowders for SOFC Applications

Elena Roda, Agusti Sin, Evgeny Kopnin, Laura Fabbrini, Miriam Piana
and Antonio Zaopo
Pirelli Labs, Milan / Italy

Elaboration, by Tape-Casting, of an SOFC Half-Cell for Low Temperature Applications

Claire Bonhomme^{1,2}, Sophie Beaudet-Savignat¹ and Thierry Chartier²
¹CEA Le Ripault, Monts, ²SPCTS, CNRS, Limoges / France

Nucleation and Crystal Growth Kinetics of Glass-Ceramics in the BaO-CaO-Al₂O₃-SiO₂-B₂O₃ System

Jean-Bernard Bouche¹, Frank Tietz¹, Doris Sebold¹, Sonja M. Gross²
and Detlev Stöver¹
¹IWV, ²Central Department of Technology, FZ Jülich / Germany

The Potential of Liquid Ceramics Technology for Deposition of Film Electrolytes of SOFCs

Ata Myatiev and Galina Khilchenko
Moscow Institute of Steel and Alloys, Moscow / Russia

Design and Evaluation of Ceramic Fiber Glass Matrix Composite Seals

Jae Chun Lee¹, Ji-Won Son², Hyuk Chon Kwon¹, Young Pil Kwon¹, Sung Park¹,
Jongho Lee², Joosun Kim² and Hae-Won Lee²
¹Myongji U., ²KIST, Seoul / Korea

Fabrication and Electrochemical Characterization of Cathodes for Solid Oxide Fuel Cells

Sindy Mosch¹, Nikolai Trofimenko¹, Michael Kusnezoff¹, Marco Kellner²
and Thomas Betz²
¹Fraunhofer IKTS, Dresden, ²Kerafol GmbH, Eschenbach / Germany

In-situ Determination of Leak Rates in Operating SOFC Stacks

Florian Wiener, Martin Bram, Hans-Peter Buchkremer and Detlev Stöver
IWV-1, FZ Jülich / Germany

Tape-Cast Supporting Cathode for ITSOFCs

Alessandra Sanson¹, Giulia Montanari¹, Edoardo Roncari¹ Agusti Sin²
and Antonio Zaopo²
¹CNR – ISTECC, Faenza, ²Pirelli Labs SpA, Milano / Italy

Joining Properties of a Composite Glass-Ceramic Sealant

Sonja M. Gross¹, Thomas Koppitz¹, Josef Remmel¹ and Jean-Bernard Bouche²
¹ZAT, ²IWV, FZ Jülich / Germany

Operating Conditions of Quickly Rechargeable Direct Carbon Solid Oxide Fuel Cell

Manabu Ihara, Shinichi Hasegawa, and Caroline Levy
Tokyo Institute of Technology, Tokyo / Japan

Studies on the Thermal Expansion of Glass-Ceramic Sealants

Jürgen Malzbender, Thomas Koppitz, Sonja M. Gross and Rolf W. Steinbrech
IWW-2, FZ Jülich / Germany

Measurement of High Temperature Leak Rates on Vacuum-Plasma-Sprayed SOFC Electrolytes

Patric Szabo, Muhammad Ajmal, Michael Lang, Thomas Franco and Günther Schiller
DLR Stuttgart / Germany

Particle Size: Evaluation and Adjustment of Characterization Techniques

Ana Martínez¹, Aitor Larrañaga¹, Lide M. Rodríguez-Martínez⁴, Jose L. Pizarro¹,
Maria L. Nó², Teófilo Rojo³, Ander Laresgoiti⁴ and Maria I. Arriortua¹
^{1,2,3}UPV/EHU, Bilbao, ⁴Ikerlan, Álava / Spain

Studies on Preparation of Yttria Stabilized Zirconia Thin Films by Suspension Plasma Spraying for SOFC Electrolytes

Régine Rampon, Ghislaine Bertrand and Christian Coddet
UTBM, Belfort / France

Porous Metal Supports for IT-SOFC Performance Studies under H₂/H₂O Atmosphere

Iñigo Anteparra¹, Igor Villarreal¹, Lide M. Rodríguez¹, Unai Castro¹, Mikel Rivas¹,
Ander Laresgoiti¹, Asuncion Bautista², Elena Arahetes², Joan Bas³, Jose A. Calero³
and Andres T. Aguayo⁴
¹Ikerlan S Coop, ²U. Carlos III, ³AMES SA, ⁴U. Basque Country / Spain

Fabrication of Electrolyte and Anode Bi-Layer on Metallic Substrates

Naoki Oishi, Yeong Yoo and Isobel Davidson
NRC, Ottawa / Canada

Proton Conduction of Gd-Doped SrCeO₃ in Humid Atmosphere

Ji Haeng Yu, Gyu-Rie Sim, Shiwoo Lee and Sang Kuk Woo
KIER, Daejeon / Korea

Joining Technologies for Light-Weight SOFCs

Dirk Federmann, Wilfried Behr, Arnold Cramer, Josef Rimmel and Uwe Reisgen
FZ Jülich / Germany

Optimization of Electrolyte-Supported Cells for Operation at 850°C

Jan Pieter Ouweltjes, Alina Spijkerman, Loek Berkeveld, Frans van Berkel
and Bert Rietveld
ECN, Petten / The Netherlands

Microstructural Optimisation of Materials for SOFC Applications Using PMMA Microspheres

Juan Carlos Ruiz-Morales¹, Jesús Canales-Vázquez², Juan Peña-Martínez¹,
David Marrero-López¹, John T.S. Irvine³ and Pedro Núñez¹
¹U. of La Laguna, Tenerife, ²ICMAB, Barcelona / Spain
³U. of St Andrews / United Kingdom

Rib Width Effect on the Performance of an Anode-Supported Solid Oxide Fuel Cell

Roberto Bove¹, Piero Lunghi¹, Stefano Ubertini² and Luca Andreassi²
¹U. of Perugia, ²U. of Rome / Italy

Fabrication and Characterization of Solid Oxide Fuel Cell Based on Sc-Doped Zirconia

Jong-Ho Lee, Hwa Young Jung, Hyungchul Kim Hae-Ryung Kim, Ji-Won Son, Joosun Kim and Hae-Weon Lee
KIST, Seoul / Korea

Single-Chamber Solid Oxide Fuel Cells Based on Doped Ceria Electrolytes

Salvador Piñol
Universitat de Barcelona, CSIC, Barcelona / Spain

Fabrication of NiO-CGO Thin Films for Micro Solid Oxide Fuel Cells by Spray Pyrolysis

Ulrich P. Muecke, Pascal Dessarzin, Alban Dubach, Norman Lüchinger, Lukas Schlagenhauf and Ludwig J. Gauckler
ETH Zurich / Switzerland

Low Temperature Anode-Supported SOFCs Based on Doped Ceria Electrolytes

Salvador Piñol¹, Miguel Morales^{1,2}, Mercé Segarra² and Ferrán Espiell²
¹CSIC, ²Química, U. Barcelona / Spain

Development of a 1MW SOFC System at Rolls-Royce Fuel Cell Systems

Gerry D. Agnew, Robert Collins and Rowland P. Travis
Rolls-Royce Fuel Cell Systems Ltd., Loughborough / United Kingdom

Investigation and Comparison of a Range of Intermediate Temperature Solid Oxide Electrolytes for Use in Solid Oxide Electrolysis Cell (SOEC)

Anna Lashtabeg, Steven J. Skinner and John A. Kilner
Imperial College London / United Kingdom

Transport Properties of SiO₂-BaO-RO (R = Mg, Zn) Glass Ceramic Seals for SOFC

Maria J. Pascual¹, Vladislav V. Kharton², Ekaterina Tsipis², Aleksey A. Yaremchenko², Carlos Lara¹, Alicia Durán¹ and Jorge R. Frade²
¹CSIC, Madrid / Spain, ²U. of Aveiro / Portugal

Secondary Power Generation using Fuel Cell Technology for Flying Platforms

Agata Godula-Jopek¹ and Sven Kopp², Matthias Hammer², Wolfgang Sterr² and Christian Thiele²
¹EADS Corporate Research Centre, ²EADS Military Air Systems, Munich / Germany

Liquid Tin Direct Fuel Cell JP-8, Coal and Biomass Applications

Jeff Bentley and Thomas Tao
CellTech Power LLC, Westborough, MA / USA

Electrolytes

Investigation of Proton Conduction in Novel Gallates/Aluminates

Peter R. Slater, Emma Kendrick, M. Saiful Islam
U. of Surrey, Guildford / United Kingdom

Characterization and Stability of Scandia Stabilized Zirconia with Various Bi₂O₃ Additions as a Potential IT-SOFC Electrolyte

Bing Bai¹, Nigel M. Sammes^{1,2} and Alevtina L. Smirnova²
¹Mech. Eng. and ²Mat. Sci. & Eng., U. of Connecticut, Storrs, CT / USA

Analysis of SOFC Devices Based on Strontium-Magnesium Doped Lanthanum Gallate Electrolyte for Intermediate Temperature Operation

Daniela La Rosa, Massimiliano Lo Faro, Giuseppe Monforte, Maurizio Minutoli, Vincenzo Antonucci and Antonino S. Aricò
CNR-ITAE, Messina / Italy

Preparation of Doped / Undoped BaCeO₃ Nano-Powders Using Carbonate Co-Precipitation

Richard Buchanan and Toshiyuki Mori
National Institute for Materials Science, Tsukuba / Japan

Electrical Property Characterization of 8YSZ for Solid Oxide Fuel Cells Using AC-Impedance Spectroscopy

Sumittra Charojrochkul¹, Areerak Khamnoi² and Supattra Jinawath²
¹Nat. Metal & Mat. Techn. Ctr., Pathumthani, ²Chulalongkorn U., Bangkok / Thailand

Synthesis of Nanocrystalline Powders of the System Ce_{1-x} – Bi_x – O_y for LT- SOFC Electrolytes

Alexander Pomadchik, Ata Myatiev, Peter Straumal and Dmitry Prokhorenkov
Moscow Institute of Steel and Alloys, Moscow / Russia

The Relationship between Structure and Conductivity for Iron Co-Doped LSGM

Jürgen Wackerl, Werner Fischer, Thomas Koppitz, Izaak Vinke, Dong-Hyun Peck, Sang-Kuk Woo, Lorenz Singheiser and Klaus Hilpert
IWW-2, FZ Jülich / Germany

Synthesis of BaZr_{0.4}Pr_{0.3}O_{3-d}, a New Potential SOFC Component

Anna Magrasó¹, Xavier Solans², Xavier G. Capdevila¹, Ferran Espiell¹ and Merce Segarra¹
¹Química, ²Geología, Universitat de Barcelona / Spain

Low Temperature Constrained Sintering of CGO Films for SOFC Applications

Jason Nicholas and Lutgard De Jonghe
UC Berkeley, CA / USA

Thermodynamics of Rare Earth Doped Ceria

Matvei Zinkevich, Dejan Djurovic and Fritz Aldinger
MPI for Metals Research and Stuttgart U. / Germany

A Comparison and Characterization of Nano-Particle Size Scandia Stabilized Zirconia as an IT-SOFC Electrolyte

William A. G. McPhee¹, Bing Bai², William Holden² and Nigel M. Sammes²
^{1,2}U. of Connecticut, Storrs, CT / USA

Ionic Conduction Mechanisms on the MO₂-RE₂O₃ System Using Molecular Dynamics Simulations

Albert Tarancón¹, Alejandro Morata¹, Guilhem Dezanneau², Francesca Peiró¹ and Joan Ramon Morante¹
¹U. of Barcelona / Spain, ²Ecole Centrale Paris, Chatenay-Malabry / France

Mixed Electronic and Proton Conduction in Yttrium-Doped Barium Zirconate and Gallium- and Indium-Doped Barium Cerate Materials

Stephanie Higgins, Nigel Sammes, Alevtina Smirnova and John Kilner
U. of Connecticut, Storrs, CT / USA

Mathematical Modeling of LGSF Ionic Conductivity at Intermediate Temperature

Malekifar Asghar
Islamic Azad U., Dorud, Lorestan / Iran

Sintering and Electrochemical Behaviour of Y-Doped Barium-Zirconate, Proton Conducting Electrolyte

Sophie Duval, Ulrich Vogt, Peter Holtappels and Thomas Graule
EMPA, Dübendorf / Switzerland

Modeling and Database Issues Addressed to Search Oxygen Ionic Conductors by Combinatorial Method

Jeremy C. H. Rossiny¹, Sarah Fearn¹, John Andrew Kilner¹, Daniel James Scott² and Matthew John Harvey²
¹Imperial College London, ²U. College of London / United Kingdom

Synthesis of La₂Mo₂O₉ Nanoparticles for SOFC Applications by a Novel Polymer Pyrolysis Process

Angaiah Subramania¹, Thangavelu Saradha¹, Subbiah Muzhumathi² and Thiyagarajan Vasudevan¹
¹Alagappa U., Karaikudi, ²Central Electrochemical Res. Inst., Karaikudi / India

Crystal Structure and Conductivity of Fe-Doped LSGM Solid Electrolytes

Sang Kuk Woo, Ji Haeng Yu, Jin Seong Yoo and Shiwoo Lee
KIER, Daejeon / Korea

Development of Manganese Oxide and Scandia Doped Zirconia Electrolyte for SOFC and the Phase Relations in the MnO₂-Sc₂O₃-ZrO₂ System

Dong-Hyun Peck¹, Jeong-Ho Yeon¹, Rak-Hyun Song¹, Tak-Hyoung Lim¹, Dong-Ryul Shin¹, Doo-Hwan Jung¹ and Klaus Hilpert²
¹KIER, Daejeon / Korea, ²FZ Jülich / Germany

Cathodes

Performance and Stability of Barium Strontium Cobaltite Composite Cathodes for SOFC

Wei Guo Wang and Mogens Mogensen
Risø, Roskilde / Denmark

Development of New Materials for Solid Oxide Fuel Cell Operated at Intermediate Temperature (650 – 700°C)

Annabelle Brisse¹, Anne-Laure Sauvet¹, Christelle Barthe¹ and Jacques Fouletier²
¹C.E.A. Le Ripault, Monts, ²I.N.P.G.-U.J.F. et C.N.R.S., Martin d'Hères / France

Electrical Conductivity of LSCF Thin Films for SOFC on Micro Hotplates

Daniel Beckel¹, Danick Briand², Anja Bieberle-Hütter¹, Jérôme Courbat², Nicolaas F. de Rooij² and Ludwig J. Gauckler¹
¹ETH Zürich, ²U. of Neuchâtel / Switzerland

Optimization of the Electrochemical Performance of SOFC Composite Electrodes by Discrete Modelling

Ludwig Schneider¹, Christophe Martin¹, Yann Bultel², Jennifer Simonet¹, Georges Kopelski¹ and Didier Bouvard¹
¹GPM2, ²LEPMI, Insti.Nat. Polytechnique de Grenoble, Saint Martin d'Hères / France

A New Route to LSM/YSZ Graded Nanocomposite as Cathode for IT-SOFC

Agnes Princivalle, Samir Boulfrad and Elisabeth Djurado
ENSEEG-INP Grenoble, St Martin d'Hères / France

Optimization of Synthetic Conditions of Spray Pyrolysis by Acids Addition for Development of Highly Active Ni-SDC Cermet Anode

Mitsunobu Kawano¹, Koji Hashino¹, Hiroyuki Yoshida¹, Toru Inagaki¹, Hiroshi Ijichi², Sei-ichi Suda³, Koichi Kawahara³ and Seiji Takahashi³
¹KEPCO, Hyogo, ²Kanden Power-Tech Corporation, Osaka
³Japan Fine Ceramics Center, Nagoya / Japan

Cr-Poisoning of LSM-Cathodes

Rasmus Barfod, Yi-Lin Liu and Peter Vang Hendriksen
Risø National Laboratory, Roskilde / Denmark

Development of Cr-Tolerant Cathode Catalysts for SOFCs

Michael C. Tucker, Craig P. Jacobson, Lutgard C. DeJonghe and Steven J. Visco
Lawrence Berkeley National Laboratory, Berkeley, CA / USA

Structure and Conducting Properties of Substituted Praseodymium Orthoferrites Films

Idoia Ruiz de Larramendi, Ricardo López, José Ignacio Ruiz de Larramendi, Fabrice Mauvy, María Isabel Arriortua, Jean-Claude Grenier and Teófilo Rojo
U. del País Vasco, Bilbao / Spain

Characterisation of Substituted Praseodymium Manganites as Potential Cathode Materials

Teófilo Rojo, Iratxe de Meatzá, José Ignacio Ruiz de Larramendi, Anthony R. West and María I. Arriortua
U. del País Vasco, Bilbao / Spain

Synthesis of Nanocrystalline Lanthanum Nickelate $\text{La}_2\text{NiO}_{4+\delta}$ as a Cathode of LT-SOFC

Alexander Pomadchik, Ata Myatiev, Nadeжда Diachenko and Timur Kudaev
Moscow Institute of Steel and Alloys, Moscow / Russia

Investigation of Nickelate-Based Cathodes for SOFC

Zhengliang Xing and Rich W Goettler
SOFCo-EFS Holdings, LLC, Alliance, OH / USA

Synthesis and Characterization of $\text{Ba}_{0.5}\text{Sr}_{0.5}\text{Co}_{1-x}\text{Fe}_x\text{O}_{3-\delta}$ Nanopowders for Intermediate Temperature Solid Oxide Fuel Cell Applications

Edoardo Magnone^{1,2}, Masaru Miyayama¹ and Enrico Traversa²
¹The U. of Tokyo / Japan, ²U. Rome / Italy

Thermoanalytical Investigations of Nano-Phase Formation in Strontium and Iron-doped Lanthanum Cobaltites

Edoardo Magnone^{1,2}, Enrico Traversa¹ and Masaru Miyayama²
¹U. of Rome / Italy, ²U. of Tokyo, Tokyo / Japan

Development of Oxygen Isotope Exchange Measurements Using Ink-Jet Printed Perovskites

Sarah Fearn¹, Jeremy C. H. Rossiny¹, John A. Kilner¹, Yong Zhang² and Lifeng Chen²
¹Imperial College London, ²U. of London / United Kingdom

Platinum Migration at the Pt/YSZ Interface

Jimmi Nielsen¹, Torben Jacobsen¹ and Mogens Mogensen²
¹TUD, Lyngby, ²Risø, Roskilde / Denmark

Characteristics of Perovskite-like La-Ni-M-O (M=Co, Cu) Materials for SOFC Application

Nikolay Velinov¹, Juncai Sun², Wenyuan Gao^{2,3} and Vladimir Kozhukharov¹
¹U. of Chemical Technology and Metallurgy, Sofia / Bulgaria
²Dalian Maritime U., ³Dalian Institute of Light Industry, Dalian / China

Characterization of $\text{Nd}_{0.8}\text{Sr}_{0.2}(\text{Mn}_{1-x}\text{Co}_x)\text{O}_3$ Cathode Materials for Solid Oxide Fuel Cells

Karmele Vidal¹, Lide M. Rodríguez-Martínez⁴, Luis Ortega San-Martin¹, Estibaliz Díez-Linaza⁴, María L. Nó³, Teófilo Rojo¹, Ander Laresgoiti⁴ and María I. Arriortua²
^{1,2,3}Ciencia y Tecnología, UPV/EHU, Bilbao, ⁴Ikerlan, Álava / Spain

Electrochemical Analysis of $\text{Ba}_{0.5}\text{Sr}_{0.5}\text{Co}_{0.8}\text{Fe}_{0.2}\text{O}_{3-\delta}$ and $\text{La}_{0.6}\text{Sr}_{0.4}\text{CoO}_{3-\delta}$ Cathodes Supported on $\text{Ce}_{0.85}\text{Sm}_{0.15}\text{O}_{1.925}$ Electrolyte

Gunnar Nurk, Indrek Kivi, Priit Möller and Enn Lust
U. of Tartu, Tartu / Estonia

Mass Transfer Processes at Solid Oxide Fuel Cell Cathode | Electrolyte Interface

Enn Lust, Gunnar Nurk, Priit Möller, Indrek Kivi and Priit Nigu
U. of Tartu, Tartu / Estonia

Electrical Performance of LSM and LSM-YSZ Cathode Half-Cells

Rosana Z. Domingues, Gladson C. Francisquini, Márcia C. Brant and Tulio Matencio
U. Federal de Minas Gerais, Belo Horizonte / Brazil

Layered Perovskites as Promising Cathodes for Intermediate Temperature SOFCs

Albert Tarancón¹, John A. Kilner² and Stephen Skinner²
¹U. Barcelona, Barcelona / Spain, ²Imperial College London / United Kingdom

Correlation of Impedance Response with $\text{La}_{1-x}\text{Sr}_x\text{MnO}_{3-d}$ Microelectrode Geometry

Gerardo Jose la O¹ and Yang Shao-Horn²
^{1,2}MIT, Cambridge, MA / USA

Comparison of the Surface Exchange Resistance of Mixed Conducting SOFC Cathode Materials

Frank S. Baumann, Jürgen Fleig and Joachim Maier
MPI for Solid State Research, Stuttgart / Germany

Development of Low Temperature Cathode Materials

Frans van Berkel, Marc van Tuel, Guillaume Schoemakers and Bert Rietveld
ECN, Petten / The Netherlands

Optimization of Cathodes for Solid Oxide Fuel Cells

Sven Uhlenbruck, Andreas Mai, Vincent A.C. Haanappel, Frank Tietz, Hans Peter Buchkremer and Detlev Stöver
IWV, FZ Jülich / Germany

Synthesis of Lanthanum Strontium Cobalt/Yttria-Stabilized Zirconia Nano-Composites for SOFC Cathode

I-Ming Hung, De-Tsai Hung, Kuan-Zong Fung and Min-Hsiung Hon
National Cheng Kung U., Tainan / Taiwan

Interfacial Behaviour of Zirconia and Lanthanum Nickel Ferrite Solid Oxide Fuel Cell Layers

Laura Millar and Charles Hatchwell
Rolls Royce Fuel Cell Systems, Loughborough, LE11 3GR / United Kingdom

$\text{La}_{1-x}\text{Sr}_x\text{FeO}_3$ Perovskites as Cathode Materials for Solid Oxide Fuel Cells

Ulrich F. Vogt, Joseph Sfeir, Christian Soltmann and Peter Holtappels
EMPA, Duebendorf / Switzerland

Oxygen Transport in Epitaxial Thin Films of $\text{La}_2\text{NiO}_{4+\delta}$

Monica Burriel¹, Gemma Garcia², Jose Santiso¹, John A. Kilner³,
Richard J. Chater³ and Stephen J. Skinner³

¹ICMAB-CSIC, ²Física, U. de Barcelona, Bellaterra / Spain

³Imperial College London / United Kingdom

Mechanical Modelling of Redox Cycling Damage in Solid Oxide Fuel Cells

Dimitris Sarantaridis and Alan Atkinson

Imperial College London / United Kingdom

Interface Stability Studies: $\text{La}_{0.8}\text{Sr}_{0.2}\text{Ga}_{0.8}\text{Mg}_{0.2}\text{O}_3$ / $\text{La}_{0.6}\text{Sr}_{0.4}\text{Fe}_{0.8}\text{Co}_{0.2}\text{O}_{3-x}$ Electrode

Elena Roda¹, Agusti Sin¹, Evgeny Kopnin¹, Michele Morrone¹, Antonio Zaopo¹,
Claudio-Maria Mari² and Riccardo Ruffo²

¹Pirelli Labs SpA, ²Univ. Milano-Bicocca, Milan / Italy

Anodes

Physical Characterization of Y-Ce-Ti Oxides as Mixed Conducting Anode Materials in Solid Oxide Fuel Cells

Panagiotis Nikolopoulos¹, Xenofon Mantzouris¹ and Frank Tietz²

¹U. of Patras, Patras / Greece, ²IEV-1, FZ Jülich / Germany

A New Approach to Study the Structure vs Performance Relationship of SOFC Electrodes

Ali Abbaspour, Krishnaswamy Nandakumar, Karl T. Chuang and Jingli Luo

U. of Alberta, Edmonton / Canada

The $\text{H}_2/\text{H}_2\text{O}/\text{Ni}/\text{Zirconia}$ Point Electrode: Effects of Impurities on the Zirconia Surface

Jens Høgh¹, Karin Vels Hansen¹, Ib Chorkendorff², Torben Jacobsen²
and Mogens Mogensen¹

¹Risø, Roskilde, ²TUD, Lyngby / Denmark

Net-Shape Processed Cermet Electrodes for SOFCs

Vladimir Petrovsky, Harlan U. Anderson and Peter Varvak

U. Missouri-Rolla, MO / USA

Characterisation of Ni-YSZ-Cermets with Respect to Redox Stability

Manuel Ettler, Günter Blaß and Norbert H. Menzler

IWV-1, FZ Jülich / Germany

$\text{Ni}_{1-x-y}\text{Mg}_x\text{Al}_y\text{O}-\text{ScSZ}$ Cermet Anodes for Biogas-Fueled SOFCs

Yusuke Shiratori, Yasutake Teraoka and Kazunari Sasaki

Kyushu U., Fukuoka / Japan

Gas Concentration Impedance of SOFC Anodes

Wolfgang G. Bessler
IWR, U. of Heidelberg / Germany

The Influence of Equilibrium Potential on Electrochemical Kinetics of SOFC Anodes

Wolfgang G. Bessler¹, David G. Goodwin² and Jürgen Warnatz¹
¹IWR, U. of Heidelberg / Germany, ²California Inst. of Techn., Pasadena, CA / USA

Dependence of Electrochemical Performance of SOFC in Dry Methane Fuel on Anode Materials

Caroline Levy¹, Keiji Yamahara², Shinichi Hasegawa¹ and Manabu Ihara¹
¹Tokyo Institute of Technology, ²Mitsubishi Chemical Corp., Tokyo / Japan

Methane Oxidation on the Surface of Ferrite-Based Materials

Jorge Frade¹, Vladislav Kharton¹, Aleksei Yaremchenko¹, Jaõa Waerenborgh², Mikhail Patrakee³, Vladimir Sobyenin⁴, Vladimir Belyaev⁴ and Sergei Veniaminov⁴
¹CICECO, U. of Aveiro, ²Chemistry Dept, ITN, Sacavém / Portugal
³Institute of Solid State Chemistry, UDRAS, Ekaterinburg / Russia
⁴Boreskov Institute of Catalysis RAS, Novosibirsk / Russia

Effect of the Water Content in the Fuel on the Performance of Ni- Zirconia Cermet Anode

Vladimir Kozhukharov, Todor Gerganov, Sergei Grigorov and Stephan Kozhukharov
U. of Chemical Technology and Metallurgy, Sofia / Bulgaria

Coupled Electrochemistry and Transport in Ni/YSZ Cermets: Impedance Simulations and Experimental Validation

Stefan Gewies¹, Wolfgang G. Bessler¹, Jürgen Warnatz¹, Volker Sonn² and Ellen Ivers-Tiffée²
¹IWR, U. of Heidelberg / Germany, ²IWE, U. Karlsruhe / Germany

Preparation and Electrical Performance of Ni/YSZ Anode Films

Rosana Z. Domingues, Rosângela M. F. Basaglia, Tulio Matencio and Márcia C. Brant
U. Federal de Minas Gerais, Belo Horizonte / Brazil

Microstructural and Electrical Study of Ni/YSZ Cermets

Tulio Matencio, Marcia C. Brant, Fernanda T. Cunha, Cintia G. Fonseca, Bruna T. Andrade and Rosana Z. Domingues
U. Federal de Minas Gerais, Belo Horizonte / Brazil

Characterization of $\text{La}_{0.75}\text{Sr}_{0.25}\text{Mn}_{0.5}\text{Cr}_{0.5-x}\text{Al}_x\text{O}_3$ as Anode Materials for Solid Oxide Fuel Cells

Abul K. Azad and John T. S. Irvine
U. of St Andrews / United Kingdom

Processing of Ceria and Perovskite-Based Anodes for Solid Oxides Fuel Cells

Dario Montinaro¹, Vincenzo M. Sglavo¹ and Massimo Bertoldi²
¹U. degli Studi di Trento, Trento, ²EUROCOATING SpA, Pergine / Italy

Long Run Testing on Sulfur Containing Hydrocarbon Fuels of Copper-Based Direct Oxidation SOFC

Eduardo Paz, Shung Ik Lee and Zhongliang Zhan
Franklin Fuel Cells, Inc., Malvern, PA / USA

Novel LSCM Based SOFC for Direct Electrochemical Oxidation of LPG

David M. Bastidas and John T. S. Irvine
U. of St Andrews, St. Andrews / United Kingdom

Electrochemical Characterization of Ceria and Ytria-Stabilized Zirconia based Anodes for Solid Oxide Fuel Cells

Dario Montinaro¹, Vincenzo M. Sglavo¹, Stefano Modena², Sergio Ceschini², Andrea Tomasi², Thomas Zandonella³ and Massimo Bertoldi³
¹U. of Trento, Trento, ²Ctr. f. Sc. and Techn. Res., Povo, ³EUROCOATING SpA, Pergine / Italy

Cyclic Reduction and Oxidation Processes of Different SOFC Anodes

Dario Montinaro¹, Vincenzo M. Sglavo¹, Stefano Modena², Sergio Ceschini², Andrea Tomasi², Massimo Bertoldi³ and Thomas Zandonella³
¹U. of Trento, Trento, ²Ctr. f. Sc. and Techn. Res., Povo, ³EUROCOATING SpA, Pergine / Italy

Effect of Electrolyte and Electrode-Electrolyte Interface on the Impedance Response in $\text{La}_{1-x}\text{Sr}_x\text{MnO}_{3-d}$ Microelectrodes

Gerardo Jose la O¹ and Yang Shao-Horn²
^{1,2}MIT, Cambridge, MA / USA

An Impedance Study of Ni/YSZ and Ni/SSZ Cermet Anodes in a Broad Range of Operating Conditions

Volker Sonn, André Leonide and Ellen Ivers-Tiffée
IWE, U. Karlsruhe / Germany

Electrical and Mechanical Properties of Ni-YSZ Anode Support for SOFC

Ji Haeng Yu, Gun Woo Park, Doo Won Seo, Shiwoo Lee and Sang Kuk Woo
KIER, Daejeon / Korea

Desensitising Cermet Anodes to Sulfur

Augustin J. McEvoy¹ and Martin Smith²
¹EPFC, Lausanne / Switzerland
²FZ Jülich / Germany

$\text{La}_{0.75}\text{Sr}_{0.25}\text{Cr}_{0.5}\text{Mn}_{0.5}\text{O}_{3-\delta}$ as a Redox-Stable Anode

Wilko Planje and Marc van Tuel
ECN, Petten / Netherlands

Electrode Performance and Reaction Sites of Mixed Conducting Oxide Anode

Takashi Nakamura, Keiji Yashiro, Atsushi Kaimai, Takanori Otake, Kazuhisa Sato, Gil-Jae Park, Tatsuya Kawada and Junichiro Mizusaki
Tohoku U., Sendai / Japan

Interconnects

Improvement of Oxidation Resistance of Ferritic Fe-Cr Alloy for SOFC Interconnects

Akihiro Toji and Toshihiro Uehara
Hitachi Metals, Ltd., Yasugi-shi / Japan

Diffusion and Protecting Barrier Layers in a Substrate-Supported SOFC Concept

Thomas Franco, Robert Ruckdäschel, Michael Lang, Günter Schiller
and Patric Szabo
DLR Stuttgart / Germany

Interaction between Protective Coating and Metallic Interconnect Used for SOFC Application

Thomas Kiefer^{1,2}, Mohsine Zahid¹, Frank Tietz¹, Detlev Stöver¹
and Hans-Rainer Zeffass²
¹IWV-1, FZ Jülich, ²EirongKlinger AG, Dettingen-Erms / Germany

The Effect of Minor Alloying Elements in Ferritic Steels for Interconnects in SOFCs

Mikael Schuisky¹, Andreas Rosberg¹, Lars Mikkelsen², Søren Linderøth²,
Niels Christiansen³ and Jørgen Gutzon Larsen³
¹AB Sandvik Materials Technology, Sandviken / Sweden
²Risø, Roskilde, Topsoe Fuel Cells A/S, Lyngby / Denmark

Oxidation States of Mn, Cr, and Co in Mixed Spinel Studied by XANES

Anke Hagen
Risø, Roskilde / Denmark

Effect of Protective Coatings on the Electrical Properties of Metallic Interconnects for IT-SOFCs

Srikanth Gopalan, Wenhua Huang, Uday Pal and Donald Seccombe
Boston U., Boston, MA / USA

Coatings for Ferritic Steels: How to Prevent Cr-Evaporation and Maintain a Low Contact Resistance?

Massimo Bertoldi¹, Thomas Zandonella¹, Dario Montinaro², Alberto Quaranta²
and Vincenzo M. Sglavo²
¹Eurocoating SpA, Pergine, ²U. Trento / Italy

Characterization of Oxide Scales on Fe-Cr Alloy Interconnects under Dual Atmospheres and Current Flow Conditions

Teruhisa Horita, Haruo Kishimoto, Katsuhiko Yamaji, Yueping Xiong,
Natsuko Sakai, Manuel E. Britom and Harumi Yokokawa
AIST, Tsukuba / Japan

Electrical Conductivity and Defect Structure of Perovskite Oxide

La_{0.9}Ca_{0.1}(Cr, Al)O₃

Keiji Yashiro, Mamoru Hasegawa, Eiki Niwa, Kazuhisa Sato, Atsushi Kaimai,
Takanori Otake, Tatsuya Kawada and Junichiro Mizusaki
Tohoku U., Sendai / Japan

Cell, Stack & System Modeling

System Modeling of a Solid Oxide Fuel Cell System for Unmanned, Undersea Vehicles

A. Alan Burke and Louis G. Carreiro
Naval Undersea Warfare Center, Newport, RI / USA

Efficient Electrochemical Optimization of SOFC Flow Field by means of novel, lateral 2D+1D Models

Reto Flückiger¹, Andreas Tiefenauer¹, Markus Roos¹, Jeannette Clifford²
and Alexander Schuler²

¹Zurich U. of Applied Sciences (ZHAW), ²Hexis AG, Winterthur / Switzerland

Development and Validation of a Modelling Tool for SOFC Systems

Patrick König, Henrik Timmermann and Ellen Ivers-Tiffée
IWE, U. Karlsruhe / Germany

Optimization of a SOFC System: Influence of Design and Operation Parameters on System Efficiency

Piero Lunghi, Roberto Bove and Pilar Lisbona
U. of Perugia / Italy

Development of a Numerical Model for the Simulation of Anode Supported Tubular SOFCs

Paolo Iora¹ and Stefano Campanari²

¹Università degli Studi di Brescia, Brescia / Italy

²Politecnico di Milano / Italy

Macroscopic Model of Solid Oxide Fuel Cell Stack for Integrating in a Generator Simulation

Moussa Chnani, Marie-Cécile Péra, Raynal Glises and Jean-Marie Kaufmann
L2ES, UTBM, Belfort / France

Finite Element Simulation of Reactive Flow in the Active Area of a SOFC-Stack

Anne Paepcke, Wieland Beckert and Michael Kusnezoff
Fraunhofer IKTS, Dresden / Germany

Radiation Heat Transfer in Micro-Tubular SOFCs

Alevtina Smirnova and Nigel Sammes
U. of Connecticut, Storrs, CT / USA

GenFC – Generic Fuel Cell Modeling Environment

Anne Haas¹, Andreas Gubner², Markus Braun³, Viktor Hacker⁴, Markus Hufschmidt⁵ and Pablo Alonso de Dompablo⁶

¹EMPA, Dübendorf / Switzerland, ²FZ Jülich / Germany,

³Fluent Deutschland GmbH / Germany, ⁴Graz U. of Techn. / Austria,

⁵Aixprocess GbR / Germany, ⁶REDHADA SL / Spain

Detailed CFD Modeling of Anode Supported Solid Oxide Fuel Cells with Direct Internal Reforming

Vinod M. Janardhanan and Olaf Deutschmann

U. of Karlsruhe / Germany

Economical Analysis of a Generic SOFC System for Decentralised Power Production

Piero Lunghi, Marco Buccarella and Pilar Lisbona

U. of Perugia / Italy

Technological Forecasts of Fuel Cell Development and Market Penetration

Michael Hollinshead, Craig Eastman and Thomas Etsell

Facing the Future, Edmonton / Canada

Simulation of Radiation in IP-SOFCs

Simone Grosso¹, Paola Costamagna¹, Michele Bozzolo² and Robert Collins²

¹DICHEP, U. of Genoa / Italy

²Rolls-Royce Fuel Cell Systems Ltd, Loughborough / United Kingdom

Durability and Integerity

Cell Performance and Gas Analysis of Tubular Solid Oxide Fuel Cells for Kerosene-Reformed Gas

Yohei Tanaka, Nguyen Lan, Tohru Kato, Takanobu Shimada, Kenji Sugano, Akira Negishi, Ken Kato and Ken Nozaki

AIST, Tsukuba / Japan

Correlation between Chromium Evaporation from SOFC Ferritic Steel Interconnects and Cell Degradation

Heinz Nabielek, Klaus Hilpert, Elena Konysheva, Frank Tietz, Izaak C. Vinke, Egbert Wessel and Mohsine Zahid

IWV-3, FZ Jülich / Germany

Real-SOFC – A Joint European Effort to Improve SOFC Durability

Robert Steinberger-Wilckens¹, Frank Tietz¹, Bert Rietveld², Olivier Bucheli³, Rolf Rosenberg⁴, Philippe Stevens⁵ and Peter Holtappels⁶

¹Forschungszentrum Jülich, Jülich / Germany

²ECN / The Netherlands, ³HTceramix / Switzerland, ⁴VTT / Finland, ⁵EdF / France

⁶EMPA / Switzerland

Degradation of Solid Oxide Fuel Cells with Wood Gases

Nadine Frank, Mathilde Saule, Sotirios Karellas and Jürgen Karl
TU München, Garching / Germany

Effects of Component Faults on the Atmospheric Solid Oxide Fuel Cell System Operation

Miriam Kemm, Azra Selimovic and Tord Torisson
Lund Inst. of Techn., Lund / Sweden

Fuels and Fuel Issues

Gold/Perovskite Nanosized Composites as Potential Catalysts for Propane Reforming in SOFCs

Simona Barison¹, Marino Battagliarin¹, Monica Fabrizio¹, Enrico Miorin¹,
Cecilia Mortalò¹, Pierluigi Antonucci², Sebastiano Candamano²,
Vincenza Modafferi², Elvira Maria Bauer³, Carlo Bellitto³ and Guido Righini³
¹CNR-IENI, Padova, ²U. de Reggio Calabria, ³CNR-ISM, Monterotondo/ Italy

Reforming of Kerosene for APU Applications in Aircraft

Remzi Can Samsun, Joachim Pasel, Andreas Tschauder, Uwe Klüttgen,
Jan Meißner, Zdenek Pors and Ralf Peters
IWW-3, FZ Jülich / Germany

Reformer and Stack Development for Use with Coal Mine-Gas

Ludger Blum¹, Roland Peters¹, Robert Deja¹, L.G.J. (Bert) de Haart¹,
Andreas Dengel², Heinz Dörr² and Bodo Groß³
¹IWW-3, FZ Jülich, ²STEAG SaarEnergie AG, Saarbrücken,
³Inst. f. Zukunfts-Energie-Systeme, Saarbrücken / Germany

Catalytic Steam Reforming of Methane over Ru/(La, Sr)CrO₃: Relationship Between Catalytic Behaviour and Structural Insertion of Ruthenium in (La,Sr)CrO₃ Structure

Gilles Gauthier, Julian Dailly, Thierry Caillot, Jérôme Laurencin, Cyril Cayron
and Patrick Gélín
CEA de Grenoble, Grenoble / France

Ni-YSZ Reduction Process under CH₄ in a Single-Chamber SOFC

Bertrand Morel¹, Sylvio Savoie², Réal Roberge², Teko W. Napporn¹
and Michel Meunier¹
¹Ecole Polyt. de Montréal, ²Inst. de Rech. d'Hydro-Québec, Varennes / Canada

A Flame as Fuel Reformer for Solid Oxide Fuel Cells

Helmut Kronemayer¹, Wolfgang G. Bessler², Marcel Vogler², Michio Horiuchi³,
Shigeaki Suganuma³, Yasue Tokutake³, Christof Schulz¹ and Jürgen Warnatz²
¹U. Duisburg-Essen, IVG, Duisburg / Germany
²IWR, U. of Heidelberg / Germany, ³Shinko Electric Industries, Nagano / Japan

Sorbents for Natural Gas and Hydrogen Desulfurization

Gokhan Alptekin, Margarita Dubovik and Sarah DeVoss
TDA Research, Wheat Ridge, CO / USA

Comparison between Landfill Gas and Anaerobic Digestion Gas as a Fuel for SOFCs

Piero Lunghi and Matteo Dozzini
U. of Perugia / Italy

Process-Optimisation of Partial Oxidation of Diesel

Sven Wenzel, Christian Mengel, Klaus Lucka and Heinrich Köhne
Oel-Wärme-Institut gGmbH, Herzogenrath / Germany

Anode Supported Solid Oxide Fuel Cells Running on Coke Oven Gas (COG)

Roberto Bove¹, Piero Lunghi¹ and Nam Woong Cho²
¹U. of Perugia / Italy, ²RIST, Pohang / South Korea

Co-Generation of Electricity and HCN in an Electrochemical Reactor

Agnes Raj, Robert Rudkin and Alan Atkinson
Imperial College London / United Kingdom